33880
S/640/61/000/000/001/035
D258/D302

Investigating alloys ...

Also, the electrical resistivity of alloys containing 70 and 78 at.-% of Zr was increased after tempering them in a multi-stage process in the region of 200 - 300°C, thus transforming their previously 'fixed' $\gamma_{Zr}$-solid solutions into the $\delta_1$-phase. This increase in resistivity is a measure of the increased order in $\delta_1$ as compared with $\gamma_{Zr}$. There are 10 figures and 15 references: 8 Soviet-bloc and 7 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: F. A. Bough and A. A. Bauer, Constitution of Uranium and Thorium Alloys. Report BMJ-1300, UC-25 Metallurgy and Ceramic (TJD-4500, 13th Ed., rev.), Bat. Mem. Inst., Columbus, Ohio, 1958; P. D. Frost, W. M. Parris and others, Trans. Amer. Soc. Metals, 46, 231 (1956); J. M. Silcock, M. H. Davies and H. K. Hardy, Nature, 175, 731 (1955); A. G. Knapton, J. Inst. Metals, 83 (August 1955).

Card 4/4

33890

S/640/61/000/000/011/035
D205/D302

AUTHORS:     Ivanov, O. S. and Bagrov, G. N.

TITLE:     Isothermal sections at 600°, 575° and 500°C, polyther-
mal sections and the phase diagram of the triple system
uranium-molybdenum-zirconium

TEXT:  This is a direct continuation of previously published work
(Ref. 1: This publication, 141-165) using the same materials and
methods. It is concerned with the properties of the U-Mo-Zr system
at lower temperatures. The isothermal sections at 600°, 575° and
500°C are graphically presented along with the changes of hardness
and lattice parameter for the sections with 70%, 60%, 50%, 40% and
20% at.-% of U. The polythermal sections of the following constant
compositions are graphically presented: a) Zr : Mo = 1 : 3; b)
Zr : Mo = 1 : 1; c) 70% U; d) 60% U. A projection of the phase dia-

Card 1/3

33890
S/640/61/000/000/011/035
D205/D302

Isothermal sections at ...

gram of the triple system U-Mo-Zr on the concentration triangle and the two binary diagrams U-Mo and Zr-Mo are given. A full scheme of the mono- and invariant transformations in the triple systems is presented diagrammatically. The main conclusions which follow pertain also to the preceding paper (Ref. 1:Op. cit.). It is stated that the simultaneous solubility of Mo and Zr in U is greatly limited by the formation of $ZrMo_2$ ($\mathcal{E}$-phase). Therefore, the $\gamma$-phase triple solid solutions exist only in narrow stripes along the binary systems U-Zr and U-Mo. The isothermic sections were revealed to be fairly complex, in particular in the 675 - 575°C range, owing to the presence of intermediate phases and $ZrMo_2$. It was possible to establish the regions of the existence of homogeneous $\gamma$-solid solutions. In the 675 - 650°C range a new phase $\delta_3$ is formed, having a peculiar lattice and high hardness. This phase exists down to 550°C. On the basis of 9 isothermal and 4 polythermal sections, the polythermal diagram of the U-Mo-Zr system was constructed for the first time in the region of the solid-state transformations. 31

Card 2/3

33890

Isothermal sections at ...

S/640/61/000/000/011/035
D205/D302

monovariant, 3-phase equilibria and 11 non-variant, 4-phase equilibria were revealed. The most important element of the diagram is the surface limiting the $\gamma$-solid solution region from the high Mo and Zr concentration side. The constructed diagram, together with the transformation scheme, are very important for determining the characteristics of the alloys in the system. The volume-centered cubic solid solution U-rich ($\gamma$) or Zr-rich ($\gamma_{Zr}$), changes the lattice on quenching, in the first case to a lattice of $\alpha$-uranium, in the second case to that of $\alpha$-zirconium. In samples containing more of the alloying element, another phase, ($\omega$), having a hexagonal lattice is formed. Annealing over 100 and 1000 hours of alloys quenched from 1000°C has shown that the $\gamma$-phase cannot exist after hardening and prolonged maintenance at 500°C. As a result of the decomposition of the $\gamma$-phase a special state arises, either a one-phase ($\delta_4$) state or a mixture of four phases. There are 15 figures and 3 references: 2 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: R. Domogala, D.J. McPherson and M. Hansen, J. Metals, 5, 1, 73-79 (1953).

Card 3/3

33891
S/640/61/000/000/012/035
D205/D302

21.2100

AUTHORS:     Ivanov, O. S. and Bagrov, G. N.

TITLE:       Behavior of γ-solid solutions of the system uranium-
molybdenum-zirconium during hardening and annealing

SOURCE:      Akademiya nauk SSSR. Institut metallurgii. Stroyenie
splavov nekotorykh sistem s uranom i toriyem. Moscow,
Gosatomizdat, 1961, 191-198

TEXT:  The question of the γ-solid solution stability at relatively
low temperatures is one of the important problems in studying the
alloys in the U-Mo-Zr system. If the γ-solid solution decomposes,
exposure of alloys having a high hardness is equally important. The
investigated alloys are shown in a figure as well as the lines of
equal hardness of the alloys, hardened from 1000°C, showing the si-
multaneous or separate influence of the alloying elements on the
hardness. Curves of the hardness change are given for the alloys
quenched from 1000°C, and annealed at 500°C for 100 and 1000 hours,
for the following sections: Zr : Mo ratio = 1 : 1, 3 : 1, 9 : 1

Card 1/2

33891
S/640/61/000/000/012/035
Behavior of  -solid ...
D205/D302

and for sections having constant U at.-% of 90, 70, 50, 40, 30, 20,
10. It is concluded that annealing for 100 and 1000 hours of alloys
previously quenched from 1000°C has shown that the $\gamma$-solid solution
cannot exist for prolonged periods at 500°C in the U-Mo-Zr system.
The $\gamma$-solid solution decomposes either into a single different
phase or into a mixture of 4 phases. After the 1000-hour-annealing,
the highest hardness (550 kg/mm$^2$) was found in alloys having 10
at.-% Mo and 60-30% U. There are 8 figures.

Card 2/2

33889
S/640/61/000/000/010/035
D205/D302

*21.2100*

AUTHORS:    Ivanov, O. S. and Bagrov, G. N.

TITLE:      Isothermal sections of the triple system uranium-molyb-
            denum-zirconium at 1000-525°C

SOURCE:     Akademiya nauk SSSR. Institut metallurgii. Stroyenie
            splavov nekotorykh sistem s uranom i toriyem. Moscow,
            Gosatomizdat, 1961, 467-481

TEXT:  Unalloyed uranium is not suitable for use as a reactor fuel
because of its low strength above 500°C, change in dimensions and
knoll formation at cyclic loads, low corrosion resistance and easy
oxidation. Zr and Mo are drawing attention as alloying elements
owing to their high solubility in $\gamma$-U and their strong influence on
the structure and properties of U alloys. The alloys investigated
were prepared in argon. For microstructural investigations the al-
loys were etched. Unfiltered $K\alpha$-Fe radiation was used for the X-
ray analysis. The hardness was measured by a diamond indentor at
10 kg load on a $T\Pi$ (TP) apparatus. The alloys were annealed at the

Card 1/2

Isothermal sections of the ...

33889
S/640/61/000/000/010/035
D205/D302

corresponding temperatures and hardened by quenching in water. Iso-
thermal sections of the phase diagram are given at 1000, 750, 675,
650 and 625°C. Changes of the hardness and lattice parameter are
shown graphically for the sections at 70.50 and 25 at.-% U and also
for a section having a constant 1 : 1 ratio of Zr : Mo. There are
15 figures and 4 references: 2 Soviet-bloc and 2 non-Soviet-bloc.
The references to the English-language publications read as fol-
lows: R. F. Domogala, D. J. McPherson and M. Hansen, J. Metals, 5,
1, 73-79 (1953); W. Hume-Rothery, Phil. Magaz., 22, 1013 (VII)
(1936).

Card 2/2

AF KOV, G.N.

Card 3/10  IVANOV, O. S.  Doctor of Chemical Sciences ed.  (Stroyeniye i svoystva
splavov urana, toriya i tsirkoniya;  sbornik statey(Structure and Properties of
Uranium, Thorium, and Zirconium Alloys; Collectionof Articles) Moscow, Gosatomizdat,
1963.

6

L 4 71-65

crystals forming in the articles, and in n reduction under high vacuum, the possibility of removing impurities from graphite via the vapor state. This gives rise to a diffusion of impurity atoms in the graphite lattice to the pore surface, inter-

Card 2/3

L 4 71 65

ACCESSION NR: AR5006382

action with active reagents is limited at the surface and diffusion of reaction products through the pores with removal in gas . It is suggested that the limiting stage at high temperatures is the transmission of matter at low temperatures, diffusion the graphite lattice transformation of crystallites.

ASSOCIATION:

SUB CODE

Card 3/3

BORZENKO, V.V.; BAGROV, G.V.

Measurement of the parameters of variable capacitance diodes at ultrahigh frequencies. Izv. vys. ucheb. zav.; radiotekh. 6 no.5:575-576 S-O '63.                                    (MIRA 17:1)

1. Rekomendovano kafedroy fiziki sverkhvysokikh chastot Khar'kovskogo gosudarstvennogo universiteta.

ACCESSION NR:   AP4012368                          S/0142/63/006/006/0708/0710

AUTHORS:  Borzenko, V. V.; Bagrov, G. V.; Petrov, V. A.

TITLE:  Germanium alloy diode with variable capacitance

SOURCE:  IVUZ. Radiotekhnika, v. 6, no. 6, 1963, 708-710

TOPIC TAGS:  diode, alloy junction diode, germanium diode, germanium alloy junction diode, diode junction capacitance diode, variable junction capacitance, semiconductor doping, diode impurity concentration, diode figure of merit, diode time constant, diode breakdown voltage, diode optimal impurity concentration

ABSTRACT:  In order to obtain a suitable variable-capacitance diode for use in microwave amplifiers, an attempt has been made to produce an alloy diode with variable capacitance and maximum Q, since maximum Q and maximum bandwidth are among the main requirements that must be satisfied by such a diode capacitor.  As a result of combined calculations and experiments (for maximum impurity concentration) have shown that the germanium used for diodes with variable

Card  1/2

ACCESSION NR:  AP4012368

capacitance and alloy contact should have a specific resistivity
0.02 ohm-cm.  Such diodes have a time constant not larger than 1.5
nanosecond, and their main shortcoming is the relatively low break-
down voltage (3--3.5 V).  An equation is derived for the Q in terms
of the impurity atom concentration, the contact potential differ-
ence, and the diode inverse bias.  It is shown that an optimal im-
purity concentration exists, from which the optimum resistivity is
determined.  Orig. art. has: 9 formulas, and 1 table.

ASSOCIATION:  Kafedra fiziki SVCh Khar'kovskogo gos. universiteta
im. A. M. Gor'kogo (Department of Microwave Physics, Khar'kov State
University)

SUBMITTED:  06Dec62          DATE ACQ:  14Feb64          ENCL:  00

SUB CODE:  SD               NO REF SOV:  001             OTHER:  001

Card  2/2

ACCESSION NR: AP4018389                    S/0120/64/000/001/0186/0188

AUTHOR: Borzenko, V. V.; Bagrov, G. V.

TITLE: Method for soldering contacts to small p-n junction areas by means of vacuum metal spraying

SOURCE: Pribory* i.tekhnika eksperimenta, no. 1, 1964, 186-188

TOPIC TAGS: pn junction, pn junction contact, vacuum metal spraying, Al spraying, In ball contact, semiconductor

ABSTRACT: A new method for making contact with small-area p-n junctions is proposed. Enclosure 1 illustrates the sequence of operations. Al is sprayed on p-Ge through a stencil with rectangular holes 30 x 50 or 50 x 100 microns. In a hydrogen furnace, Al is fused into Ge. An $Al_2O_3$ film is sprayed under vacuum over the entire Ge surface. The billet is again placed into the hydrogen furnace and heated to 660C which results in an insulating film covering the Ge surface,

Card 1/2

ACCESSION NR: AP4018389

except for the p-n junction area. A small ball of In is placed upon the p-n area and fused withit in the hydrogen furnace. Orig. art. has: 6 figures.

ASSOCIATION: Khar'kovskiy gosudarstvenny*y universitet (Khar'kov State University)

SUBMITTED: 14Jan63          DATE ACQ: 18Mar64          ENCL: 01

SUB CODE: GE              NO REF SOV: 002              OTHER: 001

Card 2/3

L 49473-65   EWT(1) EWT m/EWP(t)/EX ...
ACCESSION NR:   AP5010873                    .../ ...65-000/007/0345/0345

AUTHOR:  Sagrov, G. V.; Rorzenko, V. N.; Tsarenko, V. T.

TITLE:  Electrically controlled shf attenuator utilizing a germanium
plate.  Class 21, No. 169599

SOURCE:  Byulleten' izobreteniy i tovarnykh znakov, no. 7, 1965, 45

TOPIC TAGS:  attenuator, shf attenuator, electrically controlled
attenuator

ABSTRACT:  The proposed attenuator utilizes a germanium plate and is
designed to improve attenuation and ... the characteristic at both
inputs.  A p-n junction with an unbalanced carrier concentration is
connected to the input of the device, and an attracting electric field
is applied which changes the conductivity of the part of the plate
that absorbs the shf energy.  Orig. art. has 1 figure.      [Dw]

ASSOCIATION:  none

SUBMITTED:  04Mar64         ENCL:  ...        SUB CODE:  ...
NO REF SOV:  000            OTHER:  ...       ATD PRESS:  3245
Card  1/1

L 22775-66   EWT(1)/EWA(h)

ACC NR:   AP6010724          SOURCE CODE:   UR/0142/66/009/001/0063/0070

AUTHOR:   Tsarenko, V. T.; Bagrov, G. V.; Borzenko, V. V.

ORG:   none

TITLE:   Semiconductor waveguide attenuator with combinational electric
control for shf  power stabilization

SOURCE:   IVUZ.  Radiotekhnika, v. 9, no. 1, 1966, 63-70

TOPIC TAGS:   microwave attenuator, microwave power stabilization, pn
junction

ABSTRACT:   A description is given of a wide-band voltage-controlled
semiconductor attenuator for regulation of the shf output power level
of waveguides operating on the 3-cm wavelength.  The semiconductor atten-
uator is shown in the figure.  The Ge wafer with ohmic contacts 1, 2,
3, and rectifying contact 4 form a distributed p-n junction.  To reduce
the ripple of the attenuation-frequency characteristic and the initial
losses, the wafer thickness  is less than the skin depth of the uhf
field in the semiconductor (i.e., 0.6 mm).  The wafer may be mounted
either perpendicular to or parallel to the longitudinal axis of the
waveguide (see Fig. 1).  Voltage potential $E_T$ is applied between con-
tacts 1 and 2, and a field is created, causing the flow of current $I_f$

Card 1/3                       UDC:   621.372.852.39

L 22775-66

ACC NR:    AP6010724



**narrowed waveguide**

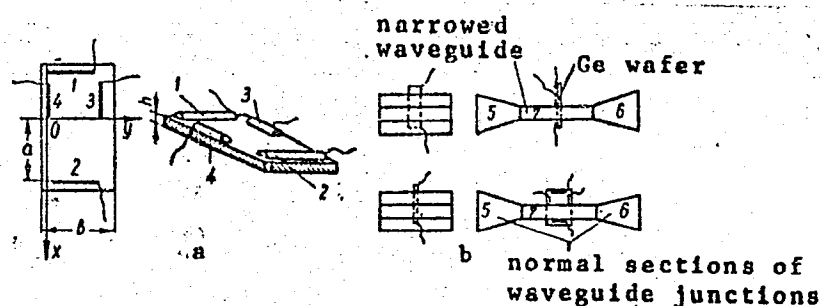**Ge wafer**

**normal sections of waveguide junctions**

Fig. 1.   Attenuator construction (a) and mounting in waveguide (b)

in the forward direction between contacts 3 and 4.   Passage of current If through the p-n junction causes the holes to be injected into the sample.   As a result, excess carrier concentration arises in the p-n junction.   Due to the gradient of carrier concentration along the length of sample, the holes partially diffuse into the region inside the waveguide.   Voltage $E_T$ accelerates the motion of the holes and increases their diffusion length.   The lifetime of the holes becomes sufficiently long for them to reach point $x = a$ (Fig. 1a).   This causes a substantial increase of sample conductivity  and, indirectly, the attenuation of the electromagnetic wave as it passes through the semi-

Card 2/3

L 22775-66
ACC NR: AP6010724                                                    0

conductor sample. Test results indicate that the transmission factor
does not vary by more than 3 db in a 20% frequency band. The speed
of response of the device operating in the pulsed mode was 200—220 μsec
for $E_T$ = 0 and 20—30 μsec for $E_T$ = 2v/cm. The attenuation charac-
teristic $S_v$ = $d\alpha/dI_f$ ($\alpha$, attenuation) was 300—600 per amp for optimum
$E_T$. The maximum dynamic range of the attenuator was 20 db. The
attenuator may be effectively used in automatic systems requiring high-
speed shf power level regulation, shf detectors, and directional
couplers. The two control signals are the error signal and its
differential. Orig. art. has: 4 figures and 2 formulas.         [BD]

SUB CODE: 09/  SUBM DATE: 04Feb65/  ORIG REF: 005/  OTH REF: 006
ATD PRESS: 4229

Card 3/3

*Bagrov, I.*

USSR/General Section - Problems of Teaching                    A-5

Abs Jour    :  Referat Zhur - Fizika, No 1, 1958, 79

Author      :  Bagrov, I.
Inst        :  -
Title       :  Demonstration Clocks With a Large Second Hand.

Orig Pub    :  Sovetskaya shkola, 1957, No 3, 45-47


Abstract    :  No abstract.




Card 1/1

BAGROV, I.A., inzh.

Use of power polynomials in solving the plane problem of the theory of elasticity. Trudy NIIZHT no.14:189-260 '58.
(MIRA 12:1)

1. Novosibirskiy institut inzhenerov zheleznodorozhnogo transporta.
(Elasticity)

BAGROV, Igor' Nikolayevich; PUCHKOV, Stanislav Grigor'yevich; ZAKHAROV, B.P., red.; GANAGO, O.A., kand.tekhn.nauk, red.; SARAFANNIKOVA, G.A., tekhn.red.

[Forging and stamping] Kuznechno-shtampovochnoe proizvodstvo. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1957. 65 p. (Nauchno-populiarnaia biblioteka rabochego - kuznetsa, no.1)
        (Forging)

BAGROV, I.N.; STRIZHOV, V.P.

Activity of the technical and economic councils of the
Middle Ural Economic Region. Biul.tekh.-ekon.inform.Gos.nauch.
-issl.inst.nauch. i tekh.inform. 17 no. 5:67-70 My '64.
(MIRA 17:6)

TARNOVSKIY, I.Ya.; GANAGO, O.A.; BAGROV, I.N.; SHELEKHOV, V.A.; Prinimali
uchastiye: MAKAYEV, S.V.; inzh.; RYABOKON', N.K., inzh.; KOTEL'NIKOV,
G.V., inzh.; PUCHKOV, S.G.; inzh.; STAROSELETSKIY, M.I., inzh.;
BAKHAREV, V.P., tekhnik.

Developing a technology for the manufacture of lightweight railroad
car wheels. Kuz.-shtam. proizv. 1 no.9:1-4 S '59.

(MIRA 12:12)

(Car wheels)   (Forging)

BAGROV, I.N., kand. fiz.-matem, nauk

Congress on the use of vacuum techniques in space research.
Vest. AN SSSR 34 no.12:67  D '64                    (MIRA 18:1)

ADERIKHIN, A.S.; AR'KOV, V.G.; BAGROV, K.I.; SALIMON, V.S.; KULIKOV, O.A.

Mechanical building-up of metal cutting tools. Biul.tekh.-ekon.
inform.Gos.nauch.-issl.inst.nauch.i tekh.inform. 16 no.8:25-27
'63.                                            (MIRA 16:10)

BAGROV, L., inzh.; LYAKHOV, K., inzh.; KHEYFETS, M., kand.tekhn.nauk

New trends in the "Regulations on the traffic schedule of the fleet."
Rech. transp. 24 no.4:5-7 '65.                    (MIRA 18:5)

SUDAKOV, S.G.; ALEKSANDROV, T.F.; BAGROV, M.A.; BULANOV, A.I.; KAMENSKAYA,
     M.V.; KUZ'MIN, B.S.; LITVINOV, B.A.; SINYAGINA, M.I.; TIMOFEYEV,
     A.A.; ENTIN, I.I.. Prinimala uchastiye SINYAGINA, V.I.. ROMANOVA,
     V.V., tekhn.red.

     [Instructions for first-, second-, third-, and fourth-order leveling]
     Instruktsiia po nivelirovaniiu I, II, III i IV klassov. Izd.3, ispr.
     i dop. Moskva, Izd-vo geod.lit-ry, 1959. 111 p.       (MIRA 13:3)

     1. Russia (1923- U.S.S.R.) Glavnoye upravleniye geodezii i karto-
     grafii.
               (Leveling--Handbooks, manuals, etc.)

SUDAKOV, S.G.; ALEKSANDROV, T.F.; BAGROV, M.A.; BULANOV, A.I.;
        KAMENSKAYA, M.V.; KUZ'MIN, B.S.; LITVINOV, B.A.; SINYAGINA,
        M.I.; TIMOFEYEV, A.A.; ENTIN, I.I. Prinimal uchastiye
        SINYAGINA, V.I.; KOMAR'KOVA, L.M., red.izd-va; ROMANOVA,
        V.V., tekhn. red.

        [Instructions for 1st, 2d, 3d, and 4th-class leveling] In-
        struktsiia po nivelirovaniiu I, II, III, i IV klassov. 4 izd.
        dop. i ispr.   Moskva, Gosgeoltekhizdat, 1963.   110 p.
                                            (MIRA 16:6)
        1. Russia (1923-  U.S.S.R.) Glavnoye upravleniye geodezii i
        kartografii.
                            (Leveling)

BAGROV, M.I.

Penicillin treatment of migrating actinomycosis of the anterior
abdominal wall. Sovet. med. 19 no.5:74-76 My '55.     (MLRA 8:8)
        (ACTINOMYCOSIS
             abdominal wall, ther., penicillin)
        (PENICILLIN, ther. use
             actinomycosis of abdominal wall)

BAGROV, M.I., mayor meditsinskoy sluzhby

Local intravenous anesthesia below a tourniquet in inflammatory
processes of the limbs. Voen.-med. zhur. no.6:41-44 Je '56.

(MIRA 9:9)

(INTRAVENOUS ANESTHESIA)     (INFLAMMATION)

BAGROV, M.I.

Retrograde invagination of the small intestine into the stomach
through Broun's anastomosis. Sov.med. 21 no.4:127-128 Ap '57.
    (INTUSSUSCEPTION                                    (MIRA 10:7)
        retrograde of small intestine into stomach through
        Broun's anastomosis)

BAGROV, M.F

BAGROV, M.I.

Retrograde invagination of the small intestines into the somach
through Braun's anastomosis. Sov.med. 21 Supplement:22 '57.
        (INTESTINES—INTUSSUSCEPTION)                    (MIRA 11:2)

BAGROV, M.I.; GRIGOR'YEVA, Yu.D. (Lipetsk)

Primary fibrosarcoma of the heart. Vrach. delo no.11:131-133
N'63
(MIRA 16:12)

1. Tret'ya gorodskaya bol'nitsa, Lipetsk.

BAGROV, M. M. (Khar'kov)


"Investigation of Diffusion Phenomena in Liquefied Gases,"

Report presented at the Fourth All-Union Conference on the Liquid State of Matter.

Kiev State Univ., 1-4 June 1959

27963
S/185/61/006/004/005/015
D274/D303

*26.II60*

AUTHOR:        Bagrov, M.M.

TITLE:         Measurement of the diffusion coefficient of nitro-
               gen in liquid oxygen

PERIODICAL:    Ukrayins'kyy fizychnyy zhurnal, v. 6, no. 4, 1961,
               486-488

TEXT:    The diffusion coefficient of nitrogen in oxygen is deter-
mined, at a temperature of 67.8°K, by the method of the gas phase.
The method consists in adding an amount of nitrogen vapor to the
oxygen vapor which was in equilibrium with the liquid. By the rate
of pressure-change which follows the dissolving of the vapor, the
diffusion coefficient can be calculated by the formulas

$$P(t) = P_2^0 + [P(0) - P_2^0] \exp\left(\frac{A^2 Dt}{l^2}\right)\left[1 - \Phi\left(\frac{A\sqrt{Dt}}{l}\right)\right] \qquad (1)$$

(for small time-intervals) and

Card 1/5

Measurement of the diffusion...

$$P(t) = P_2^0 \left[ P(0) - P_2^0 \right] \left\{ \frac{1}{1 + A} + 2A \sum_{k=1}^{\infty} \frac{\exp\left(-\frac{\lambda_k^2 Dt}{l^2}\right)}{A + A^2 + \lambda_k^2} \right\} \quad (2)$$

where

$$A = \frac{kT}{V} \cdot \frac{N}{\beta} , \quad (3)$$

(for large time-intervals); $P_2^0$ denotes the vapor pressure of the pure solvent, $P(0)$ - the vapor pressure of the mixture at the initial moment, $l$ - the height of the liquid column, $\Phi$ - the error integral, $N$ - the number of particles of solvent, $\beta$ - the partial vapor pressure ($P = \beta C$, $C$ being the concentration), $\lambda_k$ is the root of the equation $Z + A\,tgZ = 0$. The apparatus used for determining the diffusion coefficient is shown in Fig. 1. The apparatus consists of a brass cylinder divided by membrane 1 (which is the sensing element of the manometer); pickup 2 records the zero-posi-

Card 2/5

Measurement of the diffusion...

27963
S/185/61/006/004/005/015
D274/D303

tion of the membrane (indicating equality of pressure on both sides); diffusion cell 3 is a copper cylinder. For calculating the diffusion coefficient, the time dependence of the pressure was plotted, $P = f\sqrt{t}$. The diffusion coefficient was calculated from

$$\frac{P(t_m) - P_2^0}{P(t_n) - P_2^0} = \exp \frac{A^2 D}{l^2} (t_m - t_n) \frac{1 - \Phi\left(\frac{A\sqrt{Dt_m}}{l}\right)}{1 - \Phi\left(\frac{A\sqrt{Dt_n}}{l}\right)} \tag{4}$$

The accurate values of the diffusion coefficient were found by comparing the theoretical and experimental curves, by fitting the values of D. The quantity A was found from

$$A = \frac{P(0) - P(\infty)}{P(\infty) - P_2^0} . \tag{5}$$

The experiments were conducted under various conditions (within the

Card 3/5

Measurement of the diffusion...

27963
S/185/61/006/004/005/015
D274/D303

experimental framework). The results were in good agreement (an error not exceeding 5%). The diffusion coefficient D was found to be $1.07 \cdot 10^{-5} cm^2/sec$ at a temperature of $67.8^\circ K$. There are 3 figures and 3 Soviet-bloc references.

ASSOCIATIONS:    Kharkivs'kyy derzhuniversytet im. O.M. Gor'kogo (Khar'kov State University im. O.M. Gor'kyy); Fizyko-tekhnichnyy instytut nyz'kykh temperatur AN USSR, Kharkiv (Physicotechnical Institute of Low Temperatures AS UkrSSR, Khar'kov)

SUBMITTED:    November 24, 1960

Card 4/5

BAGROV, M. N.

"Irrigation Methods in the Caspian Regions and Regions Adjacent to the Don."
Cand Agr Sci, Saratov Agricultural Inst, Saratov, 1953.  (RZhBiol, No 7, Dec 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher
Educational Institutions (12)
SO: Sum. No. 556, 24 Jun 55

1. BAGROV, M. N., Eng.

2. USSR (600)

4. Irrigation Farming - Vol ga-Don Canal Region

7. Irrigation cycle and methods of flooding spring wheat in the area of the Lenin Volga-Don Navigation Canal. Gidr. i mel    No. 1    1953.

9. Monthly List of Russian Accessions, Library of Congress, _____April_____1953, Uncl.

AGAPOV, P.F.; BAGROV, M.N.

Agriculture in Egypt. Zemledelie  6  no.10:68-72  0  '58.
                    (Egypt--Agriculture)                (MIRA 11:11)

30(1)                                           SOV/39-59-9-1/14

AUTHOR:       Bagrov, M.N., Candidate of Agricultural Sciences,
              (Stalingrad)

TITLE:        Irrigation Conditions in Semidesert Alkaline Steppe

PERIODICAL:   Gidrotekhnika i melioratsiya, 1959, Nr 9, pp 3-9
                                                        (USSR)

ABSTRACT:     Irrigation of semidesert alkaline lands began only
              in recent years. In this connection, the necessity
              of an adequate irrigation system came to the forefront.
              To this end, the Stalingrad Agricultural Institute
              founded, in 1950, a special Chair for studying irri-
              gation methods for raising corn, tomatoes, cabbage
              and sugar beet on steppe land. Experiments were car-
              ried out in the area located 20 km south of the Volga-
              Don canal imeni V.I. Lenin. The soil in this region
              is clay with a large percentage of deposited carbo-
              nates. It is compact, has a low porosity (about 40%),
Card 1/2      and a low water permeability. For all crops the

Irrigation Conditions in Semidesert Alkaline Steppe

ploughing was made to depths of 20-25 cm. The irriga-
tion was performed by means of furrows. The soil
moisture was maintained, depending on the kind of crop,
within the limits of 65 to 85% of the total absorbent
capacity of the soil. The best conditions for growing
crops were established as follows: tomatoes - soil
moisture required during the vegetable formation -
80 to 85%, otherwise 70 to 75%; cabbage - 80-85% du-
ring the whole vegetation period; sugar beet - 65-80%;
corn - 70 to 75%. The soil moisture was determined at
depths of 0.6 to 1 m. The harvests yield sharply de-
creases in case where the soil moisture, due to in-
sufficient watering, drops below a certain predeter-
mined rate. Experience has shown that for soils,
considered in this article, the most favorable rates
of watering were: for vegetables 350 to 400 cu. m.;
for sugar beet 400 to 500 cu. m.; for corn 600 to
Card 2/2     700 cu. m. a hectare. There are 7 tables.

BAGROV, M. N., kand. sel'skokhozyaystvennykh nauk (Volgograd)

Irrigation practices in flooding enlarged checks. Gidr. i mel.
15 no.3:12-19  Mr '63.                              (MIRA 16:4)

(Volga Valley—Irrigation)

BAGROV, M.N., dotsent

Irrigation in the lower Volga Valley. Zemledelie 26 no.3:
34-38  Mr  '64.                                    (MIRA 17:4)

1. Volgogradskiy sel'skokhozyaystvennyy institut.

BAGROV, ..., ... (Volgograd)

Irrigating grain crops in the lower Volga Valley. Gidr. i mel.
17 no.6:4-7 Je '65.                                    (MIRA 18:7)

MIKHAYLOV, A.N.; BAGROV, N.A.; KUZNETSOV, I.D.

Experiment with the use of streptomycin in the treatment of
gonorrhea in men. Vest.ven.i derm. no.1:41-43 Ja-F '54.

(MLRA 7:2)

1. Iz Ukrainskogo nauchno-issledovatel'skogo kozhno-venerologi-
cheskogo instituta (direktor - professor A.M.Krichevskiy) Khar'-
kovskogo oblastnogo vendispansera (glavnyy vrach M.I.Lisin) i
Oktyabr'skogo rayonnogo vendispansera.

(Streptomycin)  (Gonorrhea)

BAGROV, N. A.

"Automatization of Quality Control in the Production of Nonwire Resistances."
Cand Tech Sci, Min Radio Engineergin Industry USSR, Leningrad, 1955. (KL, No 17,
Apr 55)

SO: Sum. No. 704, 2 Nov 55 - Survey of Scientific and Technical Dissertations Defended
at USSR Higher Educational Institutions (16).

BAGROV, N.A., red.

[Problems in the hydrometeorological efficiency of shelterbelts]
Voprosy gidrometeorologicheskoi effektivnosti polezashchitnogo
razvedeniia. Leningrad, Gidrometeor.izd-vo, 1950.  83 p.
                                                    (MIRA 13:1)
1. Russia (1923-  U.S.S.R.)  Glavnoye upravleniye meteorologi-
cheskoy sluzhby.
             (Windbreaks, shelterbelts, etc.)

BAGROV, N. A.

"Analysis of the Development of Levees,"  Meteor. i Gidrol., No.1, 1950

BAGROV,N.A., kandidat fiziko-matematicheskikh nauk

"Marine hydrological forecasts." K.I.Kudriavaia. Reviewed by
N.A.Bagrov. Meteor.i gidrol. no.1:67-71 Ja '52. (MLRA 8:9)

1. TSentral'nyy institut prognozov, Moskva.
         (Kudriavaia, K.I.) (Meteorology, Maritime)

BAGROV, N-A.

Meteorological Abst.
Vol. 4 No. 11
Nov. 1953
Climatology Bioclimatology

4.11-238

Bagrov, N. A., O nekotorykh voprosakh klimatologii. [On some problems in climatology.] *Meteorologiia i Gidrologiia*, No. 7:1-9, 1932. DLC—Discussion on problems in climatology. The author indicates that climatology at present cannot serve the practical requirements in full measure, because the processes of climate formation have not been sufficiently investigated and the materials of meteorological observations have not been utilized sufficiently. Many important problems of climatological investigation have not been given the proper attention from climatologists, and sufficient observational data of evaporation, heat and radiation balance and moisture circulation are not available. The author critically reviews the works, recently published, by SASHIN, POGOSIAN, LEBEDEV, SKLIAROV, KHROMOV and concludes that first it is necessary for the climatologists to develop a theory of climate, to investigate the problem of physical and geographical relations and of climatic changes under human influence. For greater effectiveness of climatological investigation the application of punched cards is desirable. *Subject Heading: 1. Problems in climatology.—N.T.Z.*

551.58

BAGROV,N.A., kandidat fiziko-matematicheskikh nauk

Average evaporation over a period of several year from dry land
surface. Meteor.i gidrol. no.10:20-25  N-D '53.   (MIRA 8:9)
                    (Evaporation)

BAGROV, N . A.

"Calculating Evaporation from a Dry Land Surface,"
Meteorologiya i gidrologiya, No 2, 1954.

BAGROV, N. A.

"Strict Evaluation of Hydrometeorological Forecasts".
Tr. Tsentr. in-ta Prognozov, No 35, pp 61-67, 1954.

The success of various methods is analyzed. A criterion of probability of right forecasts is expressed as $H = \dfrac{u - u_o}{1 - u_o}$ , where $\underline{u}$ is a correct forecast and $u_o$ a random concurrence. The required probability of confirmed forecasts is evaluated at one third. (RZhFiz, No 11, 1955)

SO: Sum No 884, 9 Apr 1956

BAGROV, N.A.

Analogy of fields of meteorological elements. Trudy TSIP no.46:40-52
'56.
(Meteorology)
(MLRA 9:12)

V 9.1-2(2)

BAGROV, N.A.

Long-range weather forecasts abroad. Meteor. i gidrol. no.5:57-62
My '57.

(Weather forecasting)
(MLRA 10:8)

BAGROV, N.A.

Statistical entropy as a measure of indefiniteness and connectedness of random events. Meteor. i gidrol. no.9:43-48 S '57. (MLRA 10:9)
(Meteorology)    (Hydrology)    (Probabilities)

BAGROV, N.A.

BAGROV, N.A.

**Experience** in applying the analogy principle to prognoses of monthly mean temperatures of the air. Trudy TSIP no.49:231-249 '57.

(Atmospheric temperature)          (MIRA 10:8)

BAGROV, N·A·

Moscow. Tsentral'nyy institut prognozov.

Trudy. vyp. 49: Voprosy dologosrochnykh prognozov (Transactions.
v. 49: Problems in Long-range Forecasting) Leningrad,
Gidrometeoizdat, 1957. 287 p. 1,250 copies printed.

Sponsoring Agency: Glavnoye upravleniye gidrometeorologicheskoy
sluzhby pri Sovete Ministrov SSSR.

Ed.: (title page): Morskoy, G.I.; Ed. (inside book): 
Shatilina, M.K.; Tech. Ed.: Braynina, M.I.

PURPOSE: The collection of articles is intended for specialists
in the field of weather forecasting, especially those
interested in long-term prognostication.

COVERAGE: The articles in this collection illustrate the present
position of long-range weather forecasting. The problems
discussed include the formulation of large mid-monthly

Card 1/ 8

Problems in Long-range Forecasting            361

temperature anomalies, the analysis of cycles and anti-cyclooge-
nesis in meridional circulation and factors causing the appearance
of autumnal frosts together with possibilities for forecasting
them.

TABLE OF
CONTENTS:

Morskoy, G.I.; Semenov, V.G.; and Kats, A.L.  Formation of
Air Temperature Anomalies on Soviet Territory in the
Winter Months                                                3

The authors define the term anomaly (or a larger anomaly)
as a departure from a certain average climatological pattern,
or, in other words, from the average temperature during a given
period.  The authors survey the occurrence of mean temperature
anomalies during three winter months (December, January, and
February) and analyze possibilities of forecasting such
anomalies for one month in advance.  In general, wide departures

Card 2/10

Problems in Long-range Forecasting                361

from average temperatures are believed to be caused by
disturbances in the interrelationship between air circulation
and thermal conditions at the surface layer of the atmosphere.
The entire article is divided into three chapters each treating
one separate factor causing the occurrence of anomalies. In the
first chapter, G.I. Morskoy states that the horizontal transfer
of air masses is the main factor in the formation of average
temperature anomalies. He also deduces the ratio  between the
zonal circulation of the atmosphere and the general thermal
conditions of the atmosphere. The author suggests a new
mathematical approach in calculating the mean monthly temperature
anomalies for absolute topography at the 500 millibar level. In
Chapter 2, V.G. Semenov analyzes the influence of the surface
layer of the atmosphere on the transfer of air masses and how
this transfer causes the occurrence of anomalies. In the third
chapter,A.L. Kats surveys the meridional and latitudinal
circulation of the atmosphere and evaluates the contribution

Card 3/10

Problems in Long-range Forecasting 361

of this transfer of air masses to temperature anomalies. The meridional and latitudinal circulations are calculated for a number of regions and altitudes in the Northern hemisphere. The number of focuses on the Soviet territory, where large-scale anomalies are formed during the three winter months, is found to fluctuate between 2 and 4. This article is based on the results of an analysis of 8 forecasts made on the 25th of each preceding month, for December, January and February of 1955-57. Data on forecasts were compiled separately by three different bureaus of the Central Institute of Forecasting (TSIP), viz., the long-term prediction division (ODPP), the division of dynamic meteorology (ODM), and the division for methodological improvement of forecasting service (ORUMDPP). There are 55 maps, 52 tables in the text and 24 tables in the appendix. There are 30 references, 16 of which are Soviet, 11 are English and 3 are German.

Card 4/10

Problems in Long-range Forecasting                    361

Rafailova, Kh. Kh.  Influence of the Artic Region on the
Character of Meridional Circulation of Air in Europe and
Western Siberia.                                                      181

The circulation of atmosphere in the Arctic was studied by
B.P. Mul'tanovskiy.  He concluded that the polar region is not
a solid high-pressure zone, but, contrary to previously
expressed opinions, is composed of a number of cyclonic
and anticyclonic areas.  Other Soviet scientists, namely B.L.
Dzerdzeyevskiy and L.A. Vitel's confirmed Mul'tanovskiy's
theory and proved that all circulation phenomena such as
occur in moderate zones, exist also in the polar zone.  The
present article analyzes the effect of air circulation in
the polar area on the behavior of meridional processes,
carrying cold arctic air masses to temperate zones and thus
bearing directly on changes in weather.  Consequently, any
weather forecasting in the moderate zone must account for
meridional processes drifting in from the North.  The author

Card 5/10

Problems in Long-range Forecasting          361

examines four possible types of thermobaric fields in the
troposphere over the Artic and also a number of variations.
Maps accompany this analysis and provide data on absolute and
relative topography at 500 millibar level for all the types
involved. The author concludes that a certain definite
character of the baric field in the Arctic produces a definite
type of meridional movements and that thermal conditions of
air masses in the Arctic are good indices for the developing
synoptic situation in the moderate zone. There are 11 tables,
22 maps, and 17 references, of which 13 are Soviet and 4 are
English.

Bagrov, N.A.  Application of the Principle of Similarity in
Forecasting Mean Monthly Air Temperatures                 231

By the "principle of similarity" the author understands an
attempt to trace similarities (analogies) in the development
of two or more atmospheric macroprocesses. The principle can
be applied in long-term forecasts when an atomospheric process
bears a similarity to a process which occurred some time in
the past but during the same season and in the same locality.

Card 6/10

Problems in Long-range Forecasting                361

The author analyzes the applications of this principle and
refers to S.T. Pagova who opposed it and to L.A. Vitel's who
modified it. The latter worked out a theory of rhythmicity
(rhythmical recurrence) of temperature processes. Vitel's'
theory is given in brief, but the author of the article
rejects it. The author establishes indices of similarity and
demonstrates their applicability in deducing mean monthly
temperatures. The data used cover a period of over 50 years
and are derived from 45 unspecified geographical localities
in Russia shown on an enclosed map. The percentage of correct
forecasts by the principle of similarity has hardly ever
exceeded 70 percent; on an average it amounted to 63.2 percent.
The author urges expansion of this method of study and the
inclusion of localities outside Russia. He suggests examination
of other factors, such as near-surface pressure, to which the
principle of similarity could be applied. There are 8 maps,
7 tables and 14 references, of which 8 are Soviet, 2 German
and 4 English.

Card 7/10

- end -

BAGROV, N.A., red.; MORSKOY, G.I., red.; PISAREVSKAYA, V.D., red.; BRAYNINA,
M.I., tekhn.red.

[Weather forecasting: collection of translated articles]Voprosy
predskazaniia pogody; sbornik perevodnykh statei. Leningrad,
Gidrometeor. izd-vo, 1958. 439 p.                          (MIRA 11:10)
                      (Weather forecasting)

3(7)

AUTHOR:     Bagrov, N. A.                          SOV/50-58-10-19/20

TITLE:      At the Congress of Scandinavian and American Meteorologists
            (Na s"yezde skandinavskikh i amerikanskikh meteorologov)

PERIODICAL: Meteorologiya i gidrologiya, 1958, Nr 10, pp 65-66 (USSR)

ABSTRACT:   The Congress referred to in the title was held in Bergen
            (Norway) on June 19-26, 1958; on the 40th anniversary of
            frontological analysis. The author was invited as an expert
            from the USSR. Taking part in the Congress were nearly all
            known meteorologists from America and Scandinavia, either as
            lecturers or as guests. The 50 talks given may be divided in
            three groups: 1) Statistic and dynamic methods of weather fore-
            cast with the use of computers. 2) Total circulation and
            frontological analysis. 3) Local synoptic processes on a small
            scale. From the point of view of international cooperation and
            the exchange of results obtained, the Congress in Bergen can
            be welcomed as it will certainly strengthen the international
            relations and the cooperation of scientists.

Card 1/1

AUTHOR:     Bagrov, N. A.                                    SOV/50-58-11-13/25

TITLE:      On Hydrodynamic Methods of Long Term Weather Forecasts (O gidro-
            dinamicheskikh metodakh dolgosrochnykh prognozov pogody)

PERIODICAL: Meteorologiya i gidrologiya, 1958, Nr 11, pp 41-46 (USSR)

ABSTRACT:   It cannot be denied that we are still very far from the solution
            of the forecasts mentioned in the title, although relatively
            intensive work has been carried out on this subject in many
            countries during the last few decades. The method of correlation
            analysis of observations has eventually disappointed meteorol-
            ogists, since it has become clear that good prognostic correla-
            tions with a high correlative coefficient were a rare exception
            rather than the rule. It has also been established that the
            parameters which govern and control atmospheric circulation
            represent certain functions of time. Thus some works which ap-
            peared at the beginning of the 1940's (Ref 3, Rossbi and
            Gaurvits et al.) were looked upon as opening up new paths,
            particularly with regard to long term prognoses. In them the
            hydrodynamics of the atmosphere for the first time showed their
            possibilities in the latter field. Hitherto relatively extensive
Card 1/3    empirical data have been collected which statistically evaluated,

On Hydrodynamic Methods of Long Term Weather Forecasts    SOV/50-58-11-13/25

permit definite conclusions to be drawn by the ODM (Otdel dinamicheskoy meteorologii = Department for Dynamic Meteorology) of the TsIP (Tsentral'nyy institut prognozov = Central Forecasting Institute) as to the conclusiveness of such forecasts. The prognoses were made according to Ye. N. Blinova's method, the calculations according to references 4, 6. On the basis of several examples the author comes to the conclusion that these prognoses are of value neither for the work in hand nor for scientific investigations. The Uchenyy sovet (Scientific Council) of the TsIP has therefore decided to discontinue prognoses by means of the method mentioned. However, what has been achieved along these lines, with the exception of a few prejudices and errors, should not be ignored. There are two methods which lead to the solution of the problem of long term prognoses: a) a synoptic statistical and a hydrodynamic method. Individual arguments, the theoretical bases, and the possibilities for development of these two methods were described, and attention was further drawn to the errors which must be eliminated. Some 10 years ago the author stated both orally and in writing on the subject of Blinova's method that the longest term for a prognosis is

Card 2/3

On Hydrodynamic Methods of Long Term Weather Forecasts     SOV/50-58-11-13/25

10 days. For prognoses over a longer period the transformation of energy in the atmosphere must be taken into consideration, which (Ref 5) is by no means easy. The science so closely related to meteorology - i.e. oceanology - a long time ago came to the conclusion that turbulent viscosity, both vertical and horizontal, must be taken into consideration. Friction is here not only a moving but also a forming power. Modern climatic theories without due consideration of turbulence are unthinkable. The author considers attempts to forecast atmospheric processes 40 to 70 days ahead as utterly senseless if the factors mentioned above have been left out of consideration. Six years' experience with prognoses according to Blinova's method has shown this with sufficient clearness. There are 2 tables and 6 Soviet references.

Card 3/3

BAGROV, N. A.

p. 2, 3

PHASE I   BOOK EXPLOITATION     SOV/3794
SOV/49-M-74

Moscow.   Tsentral'nyy institut prognozov

Voprosy dolgosrochnykh prognozov pogody   (Problems in Long-Range
Weather Forecasting)  Moscow, Gidrometeoizdat, 1959.   72 p.
(Series:  Its:  Trudy, vyp. 74)  800 copies printed.

Sponsoring Agency:  USSR.  Sovet Ministrov.  Glavnoye upravleniye
gidrometeorologicheskoy sluzhby.

Ed. (Title page):  N.A. Bagrov;  Ed. (Inside book):   V.I. Tarkhunova;
Tech. Ed.:  I.M. Zarkh.

PURPOSE:  The publication is intended for scientific workers, employees
of the weather forecasting service, and students of hydrometeorologi-
cal institutes and universities.

COVERAGE:  This is a collection of 7 articles dealing with the problem
of long-range weather forecasting.  Some articles contain specific
recommendations for charting monthly or mean-range forecasts,
and others deal with the theoretical problems of weather forecasting.
Card 1/3

Problems in Long-Range (Cont.)

No personalities are mentioned.  References are given at the end of each article.

TABLE OF CONTENTS:

Card 2/3 .

Problems in Long-Range (Cont.)

SOV/3794

Rafailova, Kh.Kh.  Application of the Regularities in the Change of
or $\frac{500}{1000}$ Anomalies in Forecasting the Surface Baric Tendency Field of
the Next Natural Synoptic Period

47

Bagrov, N.A.  Analogy of Meteorological Fields and Evaluation of
Forecasts

56

Morskoy, G.I.  Forecasting by Baric Topography Charts

69

AVAILABLE:  Library of Congress

Card 3/3

JA/cdw/jb
7-28-60

SAMOYLENKO, V.S.; BAGROV, N.A., kand.fiz.-matem.nauk, red.; GORYUSHKIN,
N.N., red.; ZAYTSOVA, T.Ye., tekhn.red.

[Formation of the temperature regimen in seas] Formirovanie
temperaturnogo rezhima morei. Pod red. N.A.Bagrova. Moskva,
Gidrometeor.izd-vo, 1959. 144 p.                    (MIRA 13:1)
            (Ocean temperature)

BAGROV, N.A.; KUKHTO, A.P.

Variability of mean monthly temperatures and altitudes of the
500 millibar isobaric surface. Sbor. rab. po sinop. no.3:139-152
'59.
(MIRA 12:11)

1. TSentral'nyy institut prognozov.
(Atmospheric temperature) (Atmospheric pressure)

BAGROV, N.A.

Analytical representation of the sequence of meteorological fields
by means of natural orthogonal components. Trudy.TSIP.no.74:3-24
'59.

(Weather forecasting)                          (MIRA 12:5)

BAGROV, N.A.

Analogy of meteorological fields and prognostic estimations.
Trudy TSIP no.74:56-68  '59.                        (MIRA 12:5)
          (Weather forecasting)

BAGROV, N.A.

Resolving meteorological fields into natural orthogonal components.
Trudy TSIP no.106:133-138 '60.                                (MIRA 13:12)
(Meteorology)

BAGROV, N.A.; KUKHTO, A.P.

Determining the Laplacian field from the    geopotential.
Meteor. i gidrol. no.4:23-27 Ap '61.                    (MIRA 14:3)
                    (Meteorology)

BAGROV, N.A.; ZVEROV, N.I.

Method of forecasting the $H_{500}$ geopotential field for mean terms.
Trudy TSIP   no.108:3-22  '61.                                   (MIRA 14:5)
                         (Weather forecasting)

S/169/62/000/007/108/149
D228/D307

AUTHOR:        Bagrov, N. A.

TITLE:         Possible approaches to a solution of the weather fore-
               casting problem

PERIODICAL:    Referativnyy zhurnal, Geofizika, no. 7, 1962, 47, ab-
               stract 7B251 (Tr. Tsentr. in-ta prognozov, no. 116,
               1962, 3 - 12)

TEXT:   There are two ways of solving the weather forecasting prob-
lem. 1. The dynamic method consists of preparing differential or in-
tegral equations to describe synoptically known processes. These
equations are then solved with allowance for initial and marginal
conditions. 2. The synoptic-statistical method is based on the ana-
lysis of empirical material in order to distinguish regularities
in the development of atmospheric processes. Two models of atmosphe-
ric processes -- the dynamic (or physical) model and Stokes' model
-- must accordingly be created. The problem of the movement of two
bodies in sky mechanics can serve as an example of the first. An
Card 1/2

Possible approaches to ....

S/169/62/000/007/108/149
D228/D307

example of the second could be a gas model in which the mean square velocity characterizes the initial state. It is shown that the statistical approach to forecasting problems should be acknowledged as practically just as perspective as the dynamic. The author reckons that the statistical apparatus corresponds better to the physical peculiarities of atmospheric processes. If the course of a particular phenomenon is determined by a small number of principal causes, dynamic methods can be expediently applied to study it. But if the phenomenon's main features depend on a very large number of factors, playing an almost identical role, the dynamic method may lead to incorrect results, and the statistical method should then be applied. Atmospheric phenomena lie somewhere midway between these two extremes. The statistical method's recognition, however, does not repudiate the need for using the dynamic method, since the physical concept of atmospheric processes is a necessary condition of successful weather forecasting. The trend, originally combining both these approaches and fully utilizing the advantages of one or the other method, appears to be the most perspective. 12 referen- ces. /¯Abstracter's note: Complete translation._7

Card 2/2

S/050/63/000/001/002/007
D218/D307

AUTHOR:        Bagrov, N. A.

TITLE:         Statistical entropy as an indicator of the similarity
               or dissimilarity of meteorological fields

PERIODICAL:    Meteorologiya i gidrologiya, no. 1, 1963, 9-15

TEXT:   The general principles of information theory are used to
evaluate the relative amount of information in a meteorological
field, using a method which is suitable for computer calculations.
It is shown how the entropy of a random vector, i.e. a vector whose
components are random quantities, can be evaluated, and hence a
rule is deduced for the entropy of the sum of such vectors. Next,
it is assumed that the vector follows a normal distribution, so
that the associated probability density is described by a Gaussian
formula whose argument involves the autocorrelation matrix of the
vector. In this case, the entropy can easily be evaluated in a
closed form, and the result of this calculation is given. In fact,
the entropy of a normal n-dimensional vector is

Card 1/3

Statistical entropy as ...

S/050/63/000/001/002/007
D218/D307

$$H(X) = \lg \sqrt{(2\pi e)^n |D|} \qquad . \qquad (13)$$

where D is the autocorrelation matrix. A formula is then derived
for the entropy of the direct sum of the two vectors. The direct
sum of two vectors X and Y which are n- and m-dimensional respec-
tively, is the new vector Z = X ⊕ Y, which is n + m-dimensional,
and whose first n components are the components of the vector X,
while the remaining components are those of the vector Y. Finally,
these formulas are used to obtain an expression for the informa-
tion I. In comparing two meteorological fields, the values of the
field on two charts may be compared by this method, and the quan-
tities to be evaluated are the autocorrelation matrices and the
mutual correlation matrices of the two vectors made up by the
points on the two charts. The final result takes the form of a
certain number for I. For example, two charts for which I = 0.20
represent an analog, while charts for which I is greater or equal
to unity are encountered rarely or not at all.

Card 2/3

Statistical entropy as ...

S/050/63/000/001/002/007
D218/D307

ASSOCIATION:   Tsentralnyy institut prognozov (Central Forecasting
Institute)

Card 3/3

BAGROV, N.A.

Complex weather forecasting method.  Meteor. i gidrol.  no.4:
14-21  Ap  '62.                                           (MIRA 15:5)
                         (Weather forecasting)

BAGROV, N.A.

> Changes in the direction of wave movement caused by wind
> action. Okeanologiia 3 no.5:829-832 '63.          (MIRA 16:11)
>
> 1. TSentral'nyy institut prognozov.

BAGROV, N.A.

    Index of the analogy of vector fields.  Trudy TSIP  no.123:4-17
'63.
                                                   (MIRA 16:9)

BAGROV, N.A.

Fluctuation in the level of internally drained lakes.  Meteor. i
gidrol.  no.6:41-46  Je  '63.                                    (MIRA 16:6)

1. TSentral'nyy institut prognozov.

(Hydrology)

BAGROV, N.A., kand.fiz.-matem. nauk

Statistical methods of weather forecasting.  Meteor.i gidrol.
no. 2:10-19  F '64.                                    (MIRA 17:5)

1. Vychislitel'nyy meteorologicheskiy tsentr.

BAGROV, N.A.; VASYUKOV, K.A.; ZVEREV, N.I.; PUD', D.A.

Principle of analogy and its use in practical work. Trudy TSIP
no.132:41-47 '64.                                (MIRA 17:10)

BAGROV, N.A., kand. fiz.-matem. nauk

Statistical analysis of the test results of some methods of forecasting thunderstorms. Meteor. i gidrol. no.8:40-46 Ag '65.          (MIRA 18:7)

1. Mirovoy meteorologicheskiy tsentr.

BAGROV, N.A.

Distribution of monthly amounts of precipitation. Trudy TSIP
no.139:3-21, '65.

(MIRA 18:6)

BAGROV, N.A., kand. fiz.-mat. nauk

Economic usefulness of forecasting. Meteor. i gidrol. no.2:
3-12   F '66.
                                                    (MIRA 19:1)

1. Gidrometeorologicheskiy nauchno-issledovatel'skiy tsentr
SSSR. Submitted August 15, 1965.